

MUTCD 2003

CALIFORNIA SUPPLEMENT

May 20, 2004

PART 8

TRAFFIC CONTROLS FOR HIGHWAY-RAIL GRADE CROSSINGS



STATE OF CALIFORNIA
BUSINESS, TRANSPORTATION AND HOUSING AGENCY
DEPARTMENT OF TRANSPORTATION

**PART 8. TRAFFIC CONTROLS FOR
HIGHWAY-RAIL GRADE CROSSINGS**

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CHAPTER 8A. GENERAL

Section 8A.01 Introduction

Support:

Paragraph 3 (“The highway agency...”) is deleted and replaced with the following:

The highway agency or authority with jurisdiction over the roadway and the light rail transit agency or authority jointly conduct an engineering study to determine the need and selection of the traffic control devices at a highway-light rail transit grade crossing. The engineering study is reviewed by the California Public Utilities Commission (CPUC), the state regulatory agency with statutory authority over highway-light rail transit grade crossings. Refer to Public Utilities Code Sections 1201 through 1205 and 7537.

Section 8A.02 Use of Standard Devices, Systems, and Practices

Guidance:

Paragraph 2 (“The appropriate traffic...”) is deleted and replaced with the following:

The appropriate traffic control system to be used at a highway-rail grade crossing should be determined by an engineering study presented to the California Public Utilities Commission by the highway agency and/or the railroad company. Refer to CPUC General Order 88, as amended, and Public Utilities Code Section 1202(a).

Standard:

Paragraph 6 (“Before any new...”) is deleted and replaced with the following:

Before any new highway-rail grade crossing traffic control system is installed or before modifications are made to an existing system, approval shall be obtained from the California Public Utilities Commission. Refer to CPUC General Order 88, as amended, and Public Utilities Code Sections 1201 through 1205 and 7537.

Section 8A.101 Relation to Other Documents

Support:

The following documents are useful sources of information:

- A. “Preemption of Traffic Signals at or near Railroad Grade Crossings with Active Warning Devices – A Recommended Practice”, Institute of Transportation Engineers (ITE), Committee TENC-4M-35, 1997.
- B. “Traffic Signal Operations Near Highway-Rail Grade Crossings” NCHRP 271, Synthesis 271, Transportation Research Board (TRB), 1996.
- C. “Guidance on Traffic Control Devices at Highway-Rail Grade Crossings”, USDOT Technical Working Group (TWG) for Highway Rail Grade Crossings, November 2002. Available from USDOT’s web site.

The following regulations govern warning devices at highway-rail grade crossings in the State and are available through the California Public Utilities Commission’s website:

- A. General Order No. 75 (as amended), REGULATIONS GOVERNING THE PROTECTION OF CROSSINGS AT GRADE OF ROADS, HIGHWAYS AND STREETS WITH RAILROADS IN THE STATE OF CALIFORNIA, Public Utilities Commission of the State of California.
- B. General Order No. 88 (as amended), RULES FOR ALTERING PUBLIC HIGHWAY-RAIL CROSSINGS, Public Utilities Commission of the State of California.
- C. General Order No. 145 (as amended), REGULATIONS GOVERNING RAILROAD GRADE CROSSINGS TO BE CLASSIFIED EXEMPT FROM THE MANDATORY STOP REQUIREMENTS OF SECTION 22452 OF THE VEHICLE CODE, Public Utilities Commission of the State of California.

CHAPTER 8B. SIGNS AND MARKINGS

Section 8B.03 Highway-Rail Grade Crossing (Crossbuck) Sign (R15-1) and Number of Tracks Sign (R15-2)

Standard:

Paragraph 3 (“If automatic gates...”) and 4 (“The supplemental...”) are deleted and replaced with the following:

If there are two or more tracks at the highway-rail grade crossing, the number of tracks shall be indicated on a supplemental Number of Tracks (R15-2) sign of inverted T shape mounted below the Crossbuck (R15-1) sign in the manner and at the height indicated in Figure 8B-1.

Section 8B.04 Highway-Rail Grade Crossing Advance Warning Signs (W10 Series)

Standard:

In Paragraph 1 (“A Highway-Rail Grade...”), sub-headings B, C and D are deleted in their entirety. Refer to CVC 21362.

Paragraph 2 (“Placement of...”) is deleted. Placement of the Highway-Rail Grade Crossing Advance Warning (W10 Series) sign shall be in accordance with Figure 8B-6 (CA).

The following is added to this section:

Standard:

The Highway-Rail Grade Crossing Advance Warning (W10 Series) signs shall be placed by the roadway authority in advance of highway-rail grade crossings on State highways, and roadways under local jurisdiction, in accordance with CVC 21362.

The Number of Tracks (CA Code W48) sign shall be placed below the Highway-Rail Grade Crossing Advance Warning (W10-1) sign at grade crossings with two or more tracks.

Support:

The Number of Tracks (CA Code W48) sign is shown in Figure 8B-101.

Section 8B.05 EXEMPT Highway-Rail Grade Crossing Signs (R15-3, W10-1a)

Standard:

This section is deleted and replaced with the following:

Highway-rail grade crossings shall be established as “exempt” from the stop requirements specified in CVC 22452 only with authorization of the California Public Utilities Commission (CPUC), pursuant to CVC 22452.5 and CPUC General Order 145, as amended.

The EXEMPT (W10-1a) sign (see Figure 8B-5), having a yellow background, shall be placed and maintained by the roadway authority below Highway-Rail Grade Crossing Advance Warning (W10 series) signs on each approach to an exempt crossing that was established after January 1, 1978. This sign shall not be replaced with a W46A (CA Code) or R15-3 sign.

The EXEMPT (CA Code W46A) sign (see Figure 8B-101), having a black background, shall be placed and maintained by the roadway authority below the Highway-Rail Grade Crossing Advance Warning (W10 series) signs on each approach to an exempt crossing that was established prior to January 1, 1978. The W46A sign displays the word EXEMPT above the crossing number assigned by the CPUC to the crossing which the sign governs. This sign shall have dimensions of 375mm (15 in) in width and 225 mm (9 in) in height. This W46A (CA Code) sign shall not be replaced with a W10-1a sign unless authorized by the CPUC.

The EXEMPT (R15-3) sign (see Figure 8B-3), having a white background, shall not be used.

Support:

These EXEMPT signs (R15-3, W10-1a, CA Code W46A) inform drivers of certain vehicles that a stop may not be required at certain designated highway-rail grade crossings, per the CVC 22452.

At crossings where the W10-1a sign is installed, the CVC provides that any vehicle listed in CVC 22452(a), other than any school bus or any school pupil activity bus, is exempted from the highway-rail grade crossing stop requirements.

At crossings where the W46A (CA Code) sign is installed and was approved prior to January 1, 1978, the CVC provides that any vehicle listed in CVC 22452(a) is exempted from the highway-rail grade crossing stop requirements.

Section 8B.07 DO NOT STOP ON TRACKS Sign (R8-8)

Guidance:

In Paragraph 4 (“On divided highways...”), the word “may” is changed to “should”.

Section 8B.08 STOP (R1-1) or YIELD (R1-2) Signs at Highway-Rail Grade Crossings

The following is added to this section:

Standard:

STOP signs shall not be installed at any highway-rail grade crossing which is controlled by automatic traffic control devices except as provided in CVC 21355 and in the Options in this section of the MUTCD.

Section 8B.09 TRACKS OUT OF SERVICE Sign (R8-9)

Standard:

Paragraph 2 (“When tracks are...”) is deleted and replaced with the following:

The R8-9 sign shall only be installed with authorization of the Public Utilities Commission. Upon placement of the R8-9 sign, traffic control devices and gate arms shall be removed and the signal heads shall be removed, covered, or turned from view to clearly indicate that they are not in operation.

Section 8B.12 Emergency Notification Sign (I-13 or I-13a)

Guidance:

Paragraph 2 (“Location and placement...”) first sentence is deleted and replaced with the following:

Location and placement should be decided cooperatively by the railroad company, the Public Utilities Commission and the public or private highway agencies based on specific site conditions.

The following is added to this section:

Standard:

Each railroad shall at each public grade crossing of its track, paint or otherwise maintain on the crossing sign post or other structure an identification number which has been assigned by the Commission. Such number shall be placed so as to be readily legible from the highway. Refer CPUC General Order 75, as amended.

Figure 8B-5. Warning Signs

Standard:

No sign shall have a metric unit or message, except per CVC 21351.3. Hence, the following signs shall not be used in California with metric messages unless specifically allowed per CVC 21351.3.

TRAINS MAY EXCEED 130 km/h (W10-8) Metric version.

Storage Space Plaque (W10-11a) Metric version.

Storage Space Plaque (W10-11b) Metric version.

Section 8B.19 Skewed Crossing Sign (W10-12)

The following is added to this section:

Guidance:

The Skewed Crossing (W10-12) sign should be used on State highways at skewed highway-rail grade crossings, that are skewed 30 degrees or less from the roadway centerline, to warn road users that the railroad tracks are not perpendicular to the highway.

Option:

The Skewed Crossing (W10-12) sign may be used on local streets at skewed highway-rail grade crossings, that are skewed 30 degrees or less from the roadway centerline, to warn road users that the railroad tracks are not perpendicular to the street.

Guidance:

If used, the symbol on the Skewed Crossing sign should show the direction and approximate angle of the crossing.

The W10-12 sign should be erected approximately midway between the crossing and the Highway-Rail Grade Crossing Advance Warning (W10-1) sign.

Section 8B.20 Pavement Markings

Standard:

The MUTCD Figures 8B-6 and 8B-7 are deleted and replaced with Figures 8B-6 (CA) and 8B-7 (CA), respectively.

Paragraph 3 (“Identical markings...”) and 4 (“Pavement markings shall...”) are deleted and replaced with the following:

Identical (RXR) markings shall be placed in each approach lane on all paved approaches to highway-rail grade crossings.

Guidance:

Paragraph 5 (“When pavement markings...”) is deleted. Figures 8B-6 (CA) and 8B-7 (CA) should be used instead.

The following is added to this section:

Option:

Pavement markings and no-passing zone markings may be omitted at exempt highway-rail grade crossings as provided in CVC 22452 and 22452.5.

Pavement (RXR) markings may be omitted where the distance between a cross street and the track is less than 15 m (50ft).

Section 8B.21 Stop Lines

The following is added to this section:

Guidance:

Double stop lines should be used as shown in Figures 8B-6 (CA) and 8B-7 (CA).

Section 8B.101 Train Station Signs (I-7 and CA Code G95F, G95G, G97A)

Option:

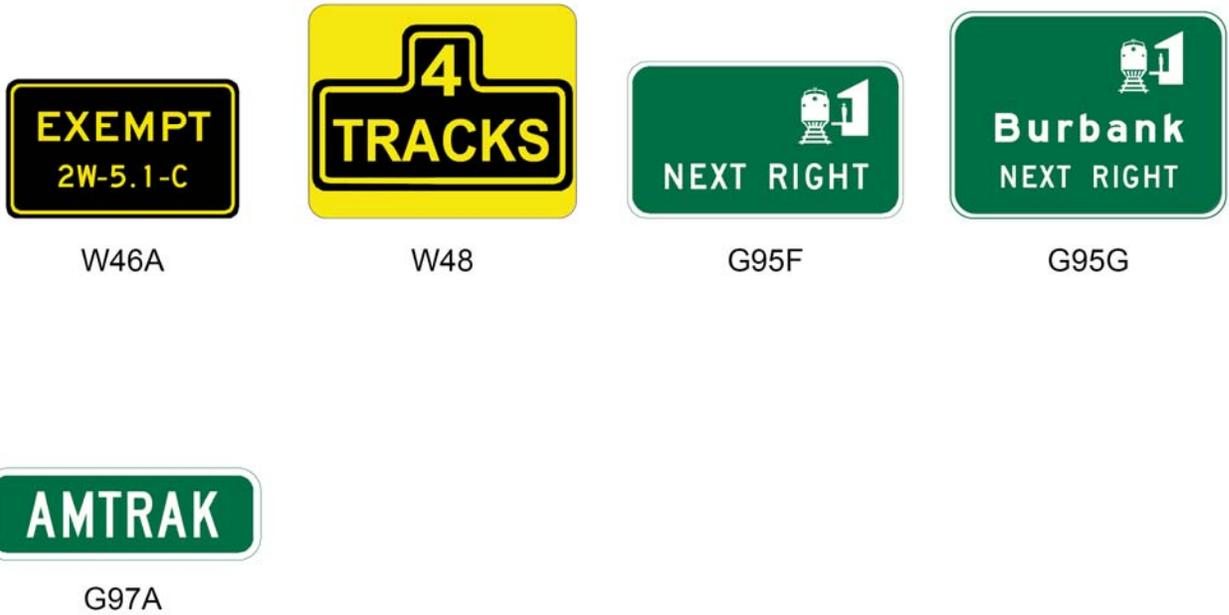
The Train Station (I-7) sign may be used to direct motorists to a train station facility.

The Train Station NEXT RIGHT (CA Code G95F) or Specific Train Station NEXT RIGHT (CA Code G95G) sign may be used on freeways and conventional highways to direct motorists to a transit authority facility. The G95G (CA Code) may be used in place of the G95F (CA Code) sign only when it is determined that the name of the station is needed to avoid confusion.

Standard:

The AMTRAK (CA Code G97A) plaque shall be used for all new installations to identify Amtrak facilities.

Figure 8B-101. California Signs for Highway-Rail Grade Crossings



Note: All sign codes are California (CA) Codes.

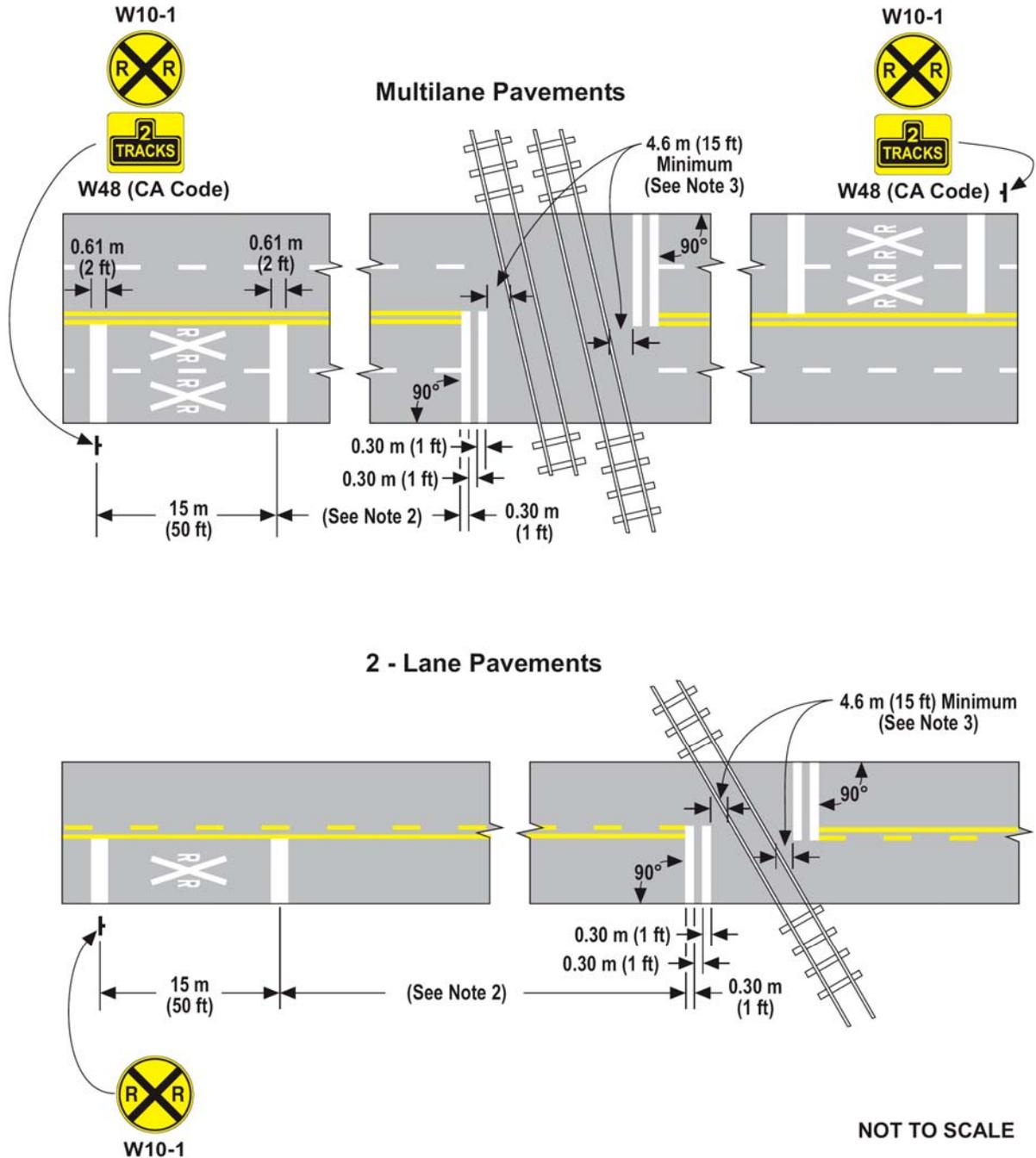
Option:

Alternatively, CALTRAIN, BART or other names of the transit system may be used, as appropriate.

Support:

The G95F, G95G and G97A (CA Codes) signs are shown in Figure 8B-101.

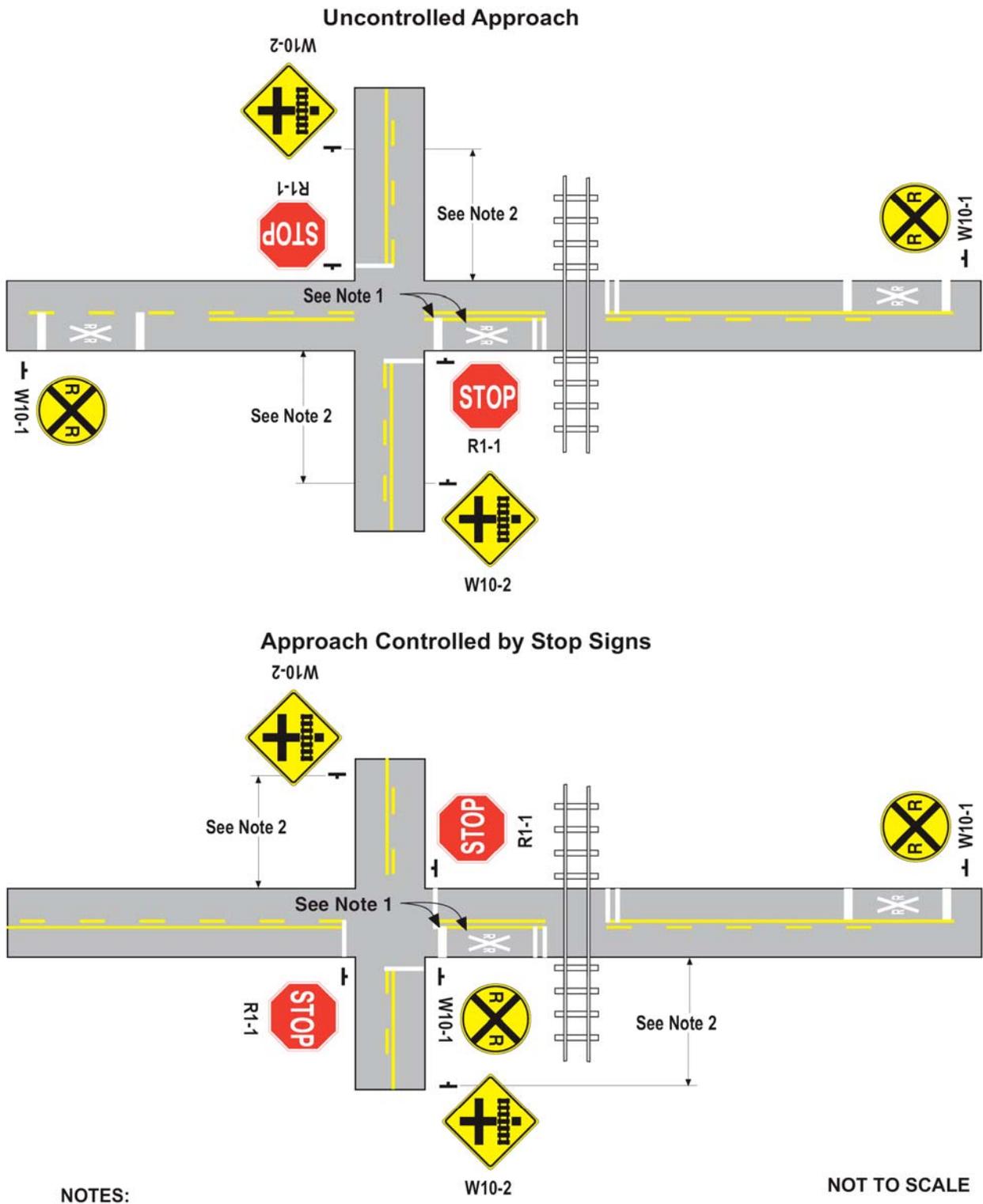
Figure 8B-6 (CA). Example of Placement of Warning Signs and Pavement Markings at Highway-Rail Grade Crossings (Sheet 1 of 4)



NOTES:

1. The centerline stripe may be extended across the tracks at unusually long crossings, due to extreme crossing angles and/or multiple tracks, where the motorist may need additional delineation.
2. Use Table 2C-4 Condition B in Chapter 2C. Minimum 15 m (50 ft).
3. Increase distance if necessary when crossing gates are used.

Figure 8B-6 (CA). Example of Placement of Warning Signs and Pavement Markings at Highway-Rail Grade Crossings (Sheet 2 of 4)

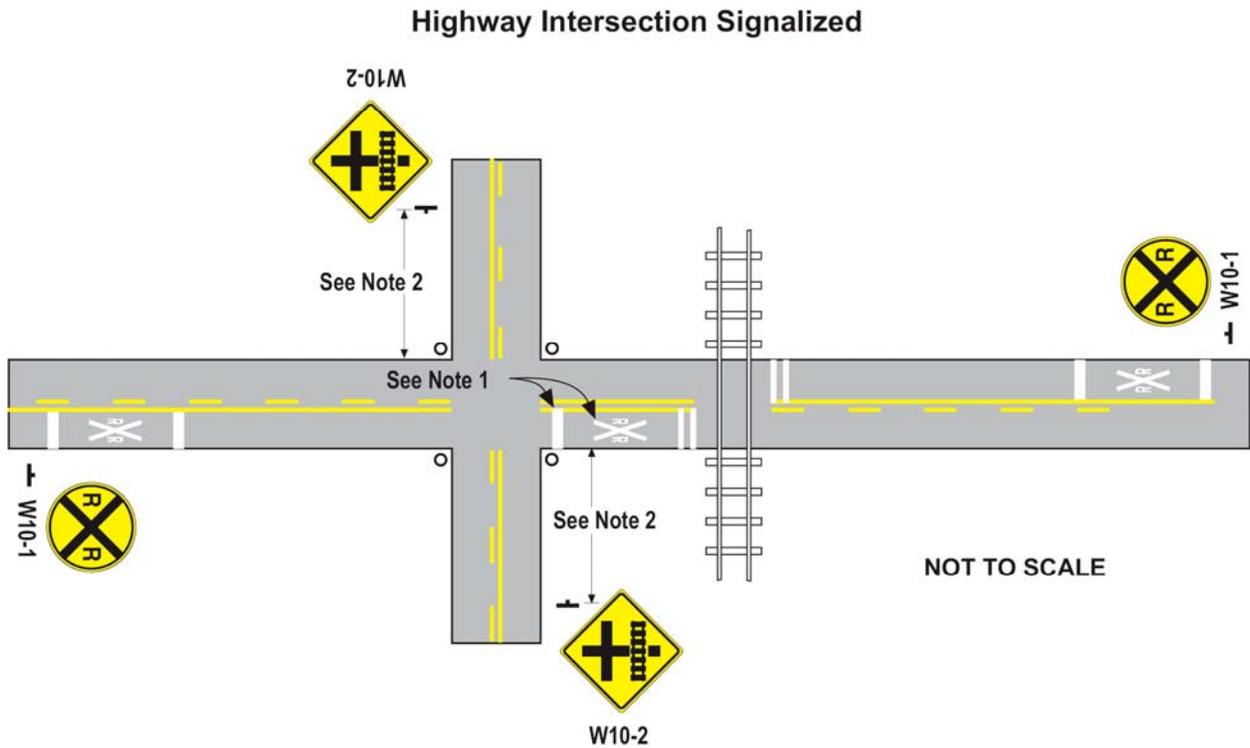


NOTES:

1. Not required if the distance between the cross street and railroad is less than 15 m (50 ft).
2. Sign placement shall be in accordance with Table 2C-4 in Chapter 2C (using the speed of the turning maneuver), and shall be measured from the highway intersection.

NOT TO SCALE

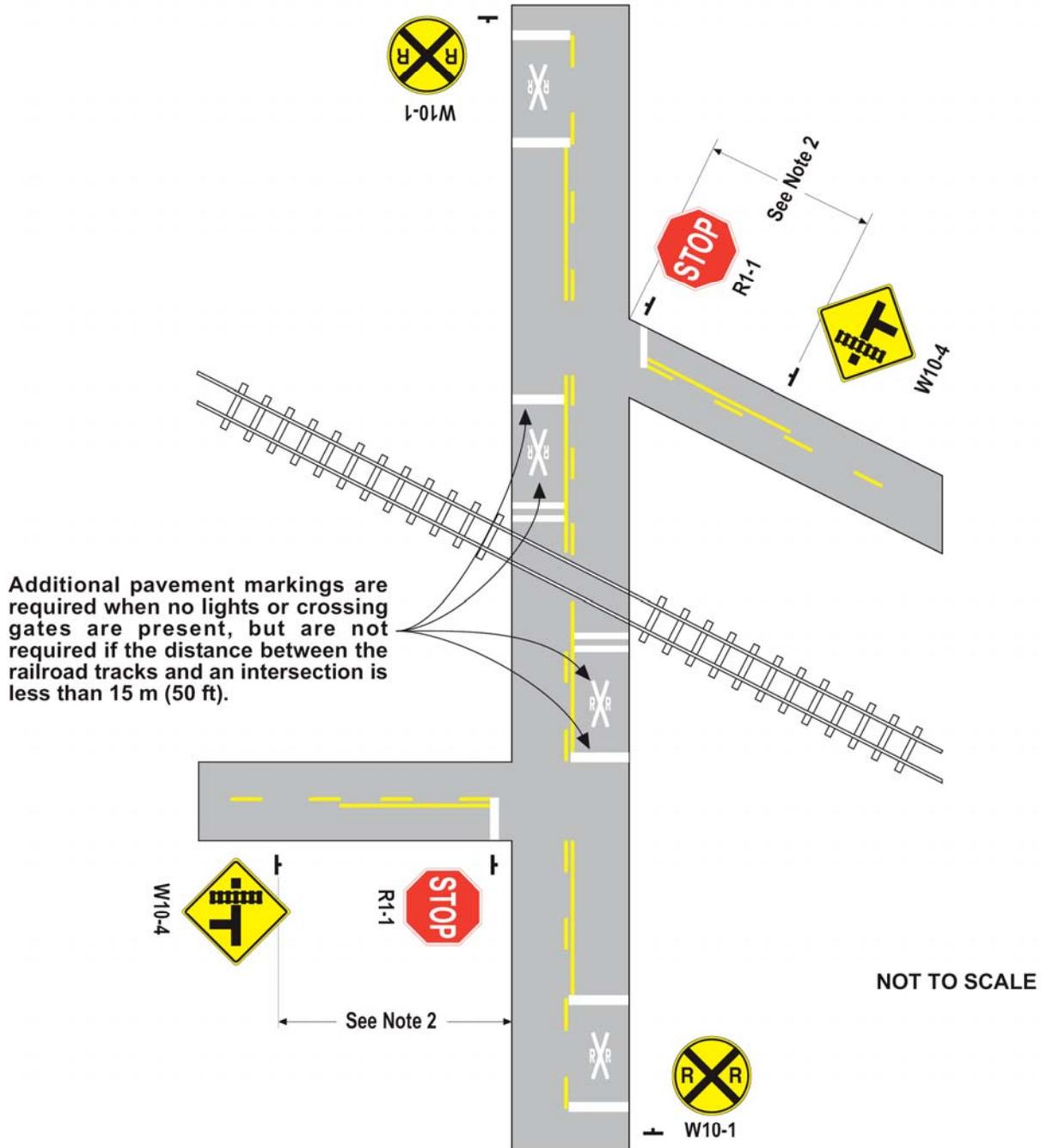
Figure 8B-6 (CA). Example of Placement of Warning Signs and Pavement Markings at Highway-Rail Grade Crossings (Sheet 3 of 4)



NOTES:

1. Not required if the distance between the cross street and railroad is less than 15 m (50 ft).
2. Sign placement shall be in accordance with Table 2C-4 in Chapter 2C (using the speed of the turning maneuver), and shall be measured from the highway intersection.

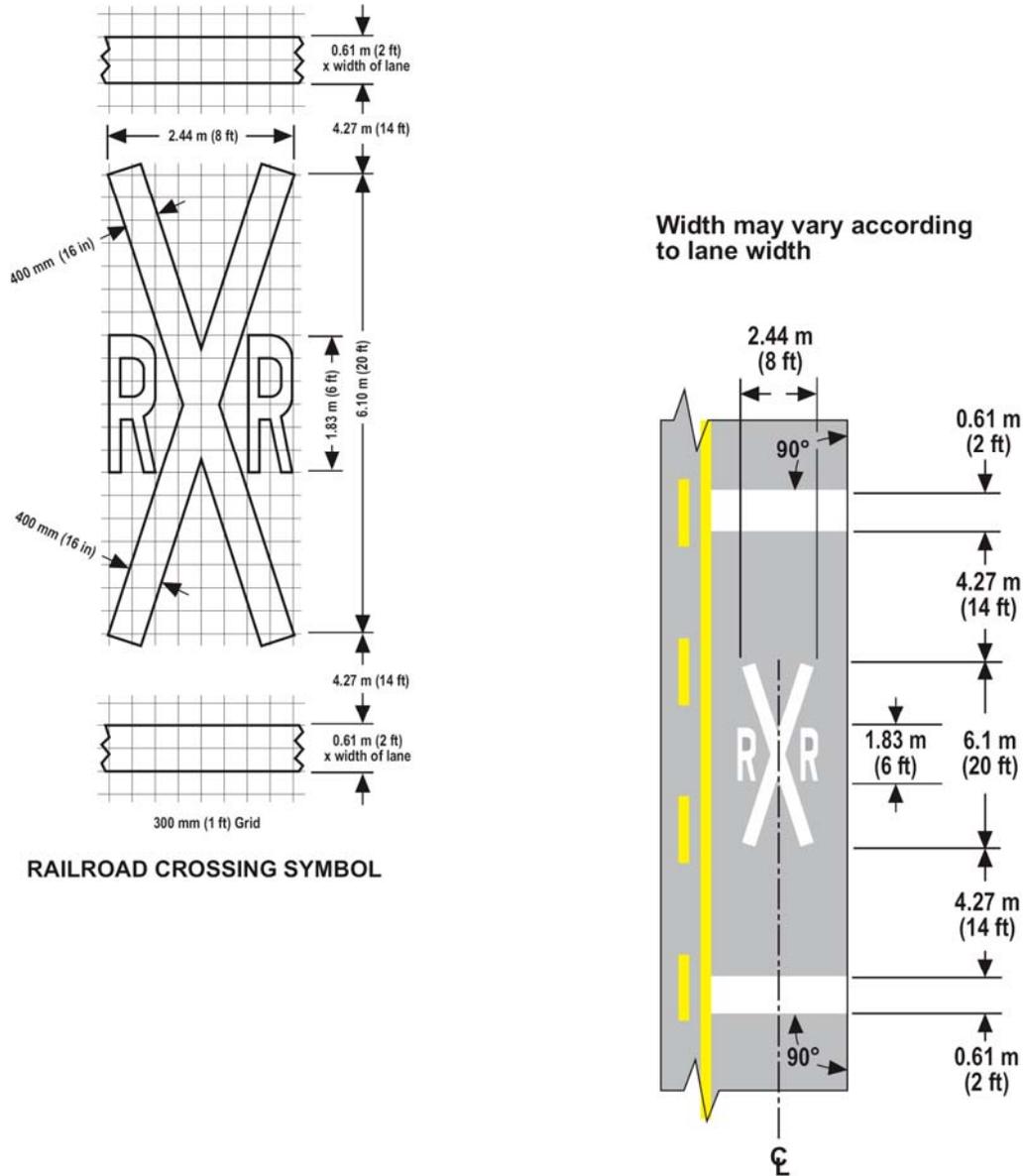
Figure 8B-6 (CA). Example of Placement of Warning Signs and Pavement Markings at Highway-Rail Grade Crossings (Sheet 4 of 4)



NOTES:

1. The centerline stripe may be extended across the tracks at unusually long crossings, due to extreme crossing angles and/or multiple tracks where the motorist may need additional delineation.
2. Sign placement shall be in accordance with Table 2C-4 in Chapter 2C (using the speed of the turning maneuver), and shall be measured from the highway intersection.

Figure 8B-7 (CA). Examples of Highway-Rail Grade Crossing Pavement Markings



NOT TO SCALE

NOTE: The design detail is also shown in the Standard Plans published by Caltrans.

CHAPTER 8C. ILLUMINATION

Support:

No Comments.

This MUTCD Chapter is adopted as is for California.

CHAPTER 8D. FLASHING-LIGHT SIGNALS, GATES, AND TRAFFIC CONTROL SIGNALS

Section 8D.02 Flashing-Light Signals, Post-Mounted

Standard:

Paragraph 2 (“Bells or other...”) is deleted and replaced with the following:

Bells or other audible warning devices shall be included in the assembly and shall be operated in conjunction with the flashing light signals, pursuant to CPUC General Order 75, as amended.

Section 8D.05 Four-Quadrant Gate Systems

Standard:

Paragraph 7 (“Except as noted...”) is deleted and replaced with the following:

The exit gate arm mechanism shall be designed to fail-safe in the up position. Refer to CPUC General Order 75, as amended.

Option:

Paragraph 19 (“Exit gate arms may fail...”) is deleted.

Section 8D.07 Traffic Control Signals at or Near Highway-Rail Grade Crossings

Standard:

In Paragraph 1 (“Traffic control signals...”), the term “very slow” shall be defined as “where train speed does not exceed 16 km/h (10 mph)”.

Support:

Refer to Section 4D.115 for railroad preemption.